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Will correction for recovery change the outcome of a proficiency test?

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EUPT-C4	Assigned values, mg/kg		Qn, %	
	Number of participants	not corrected	not corrected	corrected
Azoxystrobin	90	0.316	0.315	28
Kresoxim-methyl	91	0.396	0.404	23
Chlorpyrifos-methyl	101	0.123	0.130	23
Fenitrothion	102	0.185	0.191	20
Malathion	103	0.109	0.110	24
Pyrimiphos-methyl	103	0.078	0.084	25
Deltamethrin	78	0.060	0.065	29
Lambda-cyhalothrin	90	0.065	0.074	29
Fluquinconazole	71	0.735	0.776	27
Flutriafol	69	2.14	2.27	24
Triadimenol	80	1.620	1.665	26
Carbaryl	87	0.160	0.172	23
Carbendazim	73	1.240	1.420	29
Isoproturon	61	0.164	0.167	19
Penproprimorph	72	2.08	2.19	27
Spiroxamin	74	1.07	1.13	35

Table 1. Number of participants, assigned value and Qn calculated for results corrected or not corrected for recovery. *: increased Qn

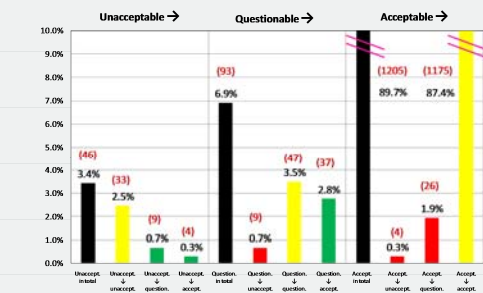


Figure 1. Changes in % of z-scores from unacceptable, questionable and acceptable after correction for recoveries, number of results in brackets. Green bars: better z-scores; red bars: poorer z-scores; yellow bars: 'same'

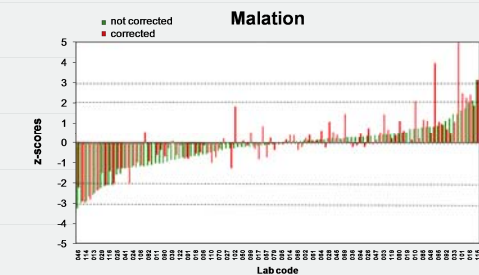


Figure 2. z-scores for calculated for malathion results, corrected and not corrected for recoveries.

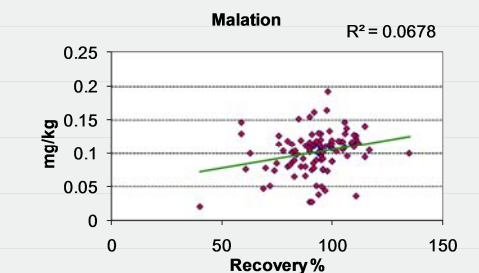


Figure 3. Correlation between malation results (mg/kg) without correction for recoveries and the recoveries in %

Introduction

It has frequently been discussed within the pesticide residue society, whether results for pesticide residues in routine food control should be corrected for recovery. To improve the discussion it was decided that the four quantitative EUPTs organised in 2010 should request two dataset from the participants, results with and without correction for recovery. The data presented in this posters is from the EUPT-C4.

Methods

The data included in this evaluation originate only from participants who submitted both results with and without correction for recoveries. Data where the participants clearly reported wrongly corrected results were left out. Only the MRM pesticides are included due to lack of data for the SRM pesticides. The organization and calculations are described in [1].

Results

Between 92-97% of the participants submitted results both with and without correction for recovery.

The assigned values and Qn are calculated for both datasets (see Table 1). The assigned value for azoxystrobin were decreased by 0.5%. The assigned values for all other pesticides were accepted by 1%-13%.

The Qn standard deviation were increased with more than 2% for 3 pesticides (fenitrothion, malathion and deltamethrin), although the correction for recovery could be expected to lower the deviation of the results.

Correction for recovery improved 50 z-scores so much that it shifted to a better class. On the other hand, 39 z-scores shifted to a poorer class. Details of the changes in z-scores are shown in Figure 1. Very few participants would have benefit from correction of the results. Most of the participant that improved one or more z-scores did also suffer from z-scores getting worse.

Figure 2 shows the z-scores histogram for both dataset for malathion, sorted by results not corrected for recoveries. The data shows that 6 acceptable z-scores were changed to 4 questionable and 2 unacceptable. Three questionable z-scores changed to acceptable and one unacceptable to questionable.

No correlation were seen between the results in mg/kg and the recoveries in %. For malation the correlation coefficient, R^2 was 0.0678 (see Figure 3). No correlation coefficient, R^2 were higher than 0.22.

Conclusions

No major changes were seen in the outcome of the EUPT-C4 after correction for recoveries. The assigned values were slightly increased but the deviation did not change consistently. Almost the same number of z-scores shifted to a better class as the number shifting to a poorer class. Results from the other EUPTs should be analysed before any decision is taken concerning correction for recovery in the EUPTs